

AMENDMENTS TO THE CLAIMS

18. (previously presented) A method for making a holey fiber, said method comprising:

stacking a plurality of structures comprising a first structure of a first material having a first softening point and a second structure of a second material having a hollow central portion and a second softening point that is higher than the first softening point, said stacking comprises arranging the plurality of structures to form a bundle containing interstices between the structures;

creating a fused element by heating the bundle to a fusion temperature to soften the first structure such that the first structure flows around a portion of the second structure and closes a portion of the interstices, and such that the second structure retains shape;

creating a preform having channels therein, by removing the second structure from the fused element;

drawing the preform at a draw temperature which is below the softening point of the first structure.

19. (previously presented) The method of claim 18, wherein said creating the fused element comprises heating the bundle to the fusion temperature of 50°C to 200°C below the second softening point, and wherein said drawing comprises drawing at a temperature that is within 70°C below the first softening point.

20. (previously presented) The method of claim 18, further comprising applying a partial vacuum to the bundle to remove air therefrom.

21. (previously presented) The method of claim 18, wherein said stacking includes stacking the plurality of structures of the first material including glass rods or tubes and the structures of the second material including glass tubes.

22. (previously presented) The method of claim 21, wherein said stacking the plurality of structures includes the first structures which are 0.5 mm to 5 mm in outside diameter, and the second structures which are 0.5 mm to 5 mm in outside diameter with inside diameter of 0.4 mm to 4.8 mm.

23. (previously presented) The method of claim 18, wherein said stacking the plurality of structures includes stacking the first and second structures, said structures comprise a silicate glass, a silica glass, a fluoride glass, a chalcogenide glass and mixtures thereof.

24. (previously presented) The method of claim 18, wherein said stacking a plurality of structures includes stacking the first structure comprising rods or tubes and the second structure comprising tubes.

25. (previously presented) The method of claim 18, wherein said creating a perform by removing the second structure comprises etching the second structure with an aqueous acidic solution.

26. (previously presented) The method of claim 18, wherein said creating a perform by removing the second structure comprises heating the fused element in an oxidizing environment.

27. (previously presented) The method of claim 18, wherein said stacking a plurality of structures further comprises stacking the second material in a central region of the bundle to form the holey fiber with a hollow core.

28. (previously presented) The method of claim 18, further comprises applying a partial vacuum to the bundle to remove air therefrom, and inserting the holey fiber into a clad tube made of the same lower softening point glass to form a complex structure and drawing the complex structure to from a

second holey fiber of reduced cross-section.

29. (previously presented) The method of claim 18, further comprises providing a clad tube around the plurality of structures in a formation of a bundle, the clad tube is of the first softening point and spaces between the clad tube and the structures are filled during said creating of the fused element.

30. (previously presented) The method of claim 18, wherein said heating the first and second materials to a fusion temperature, wherein the fusion temperature is within 50°C below the softening point of the lower softening point material and the draw temperature is within 30°C below the softening point of the lower softening point material.

31. (previously presented) A method for making a holey fiber comprising:
stacking a plurality of structures comprising a first structure of a first material having a first softening point and a second structure of a second material having a hollow central portion and a second softening point that is higher than the first softening point, the first structures being glass rods or tubes and the second structure being non-glass tubes that are rigid at the first softening point to form a bundle containing interstices between the structure;
forming a fused element by heating the bundle to a fusion temperature which is near the first softening point of the glass rods or tubes whereby the glass softens and flows around the non-glass tubes and closes the interstices;
creating a preform by removing the non-glass tubes from the fused element thus forming channels in the fused element; and

drawing the preform at a draw temperature which is near the softening point of the glass rod or tubes to form the holey fiber.

32. (previously presented) The method of claim 31, wherein said stacking the plurality of structures including the first structures being silica glass rods 1 mm to 1.5 mm in outside diameter and the second structures being graphite tubes 1 mm to 1.5 mm in outside diameter and 0.8 mm to 1.4 mm in inside diameter.

33. (previously presented) The method of claim 31, wherein fusion temperature is 10°C to 100°C below the softening point of the glass and the draw temperature is 10°C to 50°C below the softening point of the glass.

34. (canceled) The method of claim 31, wherein said removing the non-glass tubes includes removing via etching.